Source: Chugoku Sangyo Shashin Tsushin (Photos and Features on Chinese Industry), published by the Asia News Service, Tokyo, No. 71, 1 July 1966, pages 1-7.

It is a well known fact that large-scale farmland irrigation construction has been under way in China since the liberation and in particular since communization in 1958. This water conservation construction was spurred on by the unprecedented natural disasters, particularly the drought of 1959-1961. Also, in the third Five-Year Plan, which begins this year, agriculture is placed at the base of the people's economy and the movement toward agricultural water conservation construction has been further strengthened along these lines. If we look at the drainage and irrigation facilities of the entire country, we find that, at present, in May of 1966, the number of electric motors used in irrigation has increased forty-five times since 1957 (50,000 kw to 2,250,000 kw), The amount of electric power used in farming villages has increased from (120 million kw) thirty-four times in 1957 (4.1 billion kw), and 1300 out of 2000 hsien are using electric power (New China News Agency 5 Feb. 66; figures in parentheses are estimated).

According to recent information of July 1965, 90% of all hsien have powered irrigation machinery (New China News Agency, 19 May 1965). The total volume of pumps used in farm villages reached more than seven million hp in 1964, thirteen times that of 1957. The total volume of pumps in the farming villages of Chekiang Province reached 470,000 hp, irrigating more than 40% of the farmland. There are 3800 pump stations in the Chu-chiang delta with a total volume of 182,000 kw, which can protect the farmland from the sun of June-July with an average daily amount of water equal to 200-300 mm. In Kansu the total volume of pumps for irrigation and drainage use reached 880,000 hp, or 1953 pumps. On the Fan-yang plain of Kiangsi Province there is presently a 70,000 kw electric-powered irrigation and drainage [illegible]

and drains 173,000 ha, or approximately one sixth of the plain. And the electric-powered turbine-pump which appeared several years ago is rapidly spreading, with 43,000 of these in the southern provinces, irrigating more than 200,000 ha of farmland.

Next, if we consider the percentage of irrigated farmland, 70% was reached in Kwangtung Province by the autumn of 1965, and in the Chu-chiang delta, disaster can be prevented even with an average daily rainfall of 200-300 mm. Even with continuous sun for six or seven months, suitable irrigation can be assured. In the Hankow--Chia-hsing--Hu-chou plain near the Yangtze delta, more than 70% of the farmland is irrigated by diesel or electric pumps. In the Fan-yang plain of Kiangsi, 173,000 ha or one-sixth of the farmland, is drained and irrigated by electruc pumping stations, and in the Ch'ang-sha-Ch'ing-kang region of Hunan Province, 80% of the total farmland of the region has come under electric-powered drainage and irrigation.

In the three northeastern provinces of Liaoning, Kirin and Hei-lungkiang there is electric power in more than 90% of the hsien, and the amount of electric power consumed in agricultural villages has increased (end of 1965) more than seven times over the pre-communization consumption.

Large-Scale Off-Season Water Conservancy Construction

Making use of the agricultural off-season from winter of each year until spring of the following year, construction for agricultural water conservation has been carried out, but the scale has risen considerably over previous years.

Right now, in November 1965, the labor force participating in basic agricultural construction in the entire country has risen to more than 32,000,000 men, 10,000,000 more than during the same period in 1964. The amount of completed work also reached 660,000,000 m^3, or 2.3 times the construction of the preceding period--the highest record since 1960. At the height of construction work, several million farmers participated in many provinces. In the eight northern provinces and autonomous region alone, 2,000,000 ha of dry fields were brought under irrigation in the winter-spring off-season (New China News Agency, 11 June 1966).

In the North China plain, which is rich in subsurface water, many irrigation wells were dug. In Hopei, Shantung, Honan, Shensi, Inner Mongolia and the suburbs of Peking, 33,000 mechanical wells and 220,000 brick and stone wells were dug in the winter-spring agricultural construction season, and furthermore, innumerable old wells were repaired. More than 1,700,000 ha of farmland were reclaimed.

In Shantung Province, 8,700,000,000 m^3 of quarrying water conservancy works were completed and 670,000 ha of standard farmland were created, thus expanding the paddy planting area by 120,000 ha.

In the low moisture belt in the northeast, large drainage ditches were dug in the lower Yellow and Hwai River basins to combat floods. Many of the people's communes of the lower Yellow and Hwai River basins remade low moisture fields into regularly laid-out, rectangular terraced fields with drainage ditches. In the Wei-Shih-Hang irrigation region of

Anhui Province between the Yangtse and Hwai Rivers, the Eighth Period Continued Construction General Project completed the off-season work, and the irrigated area of the region was expanded from approximately 230,000 ha to more than 300,000 ha.

The largest drainage construction in Hopei Province--the Heilung--which was begun in October 1965 was 70% completed by February of this year by 400,000 farmers. This drainage construction is one part of the sea and river water control construction and is designed to protect the 1,300,000 ha of farmland in the Hopei plain from floods and on the event of its completion the 6,500,000 inhabitants of forty hsien will receive the advantage. In Hunan the Shao-shan General Trunk Canal and the Northern Truck Canal 174 Km long which is the province's first large irrigation construction was completed bringing 50,000 ha of farmland under irrigation.

Already 70% of the agricultural land of Kwangtung province is under irrigation but in order to further improve the existing drainage facilities, ditches were dug for thousands of paddies in the off-season.

In the Sinkiang Uighur Autonomous Region sixty-five large-scale basic water conservation facilities were completed one after another which expanded and improved more than 200,000 ha of irrigated land (18 March 1966, New China News Agency).

Next we shall present a number of the already completed or the major water conservancy constructions, drainage and irrigation projects in continuous construction in more detail.

The Kwangtung Province Water Conservancy Project Which Compares With Twenty-Three Swez Canals

Kwangtung Province with 70% of its farmland under irrigation stands in the forefront in water conservancy construction. At present Kwangtung Province has both 210 large and medium reservoirs of 10,000,000 m^3 to 10,000,000 m^3 capacity. Many of these were built together with other irrigation, drainage, flood prevention facilities after the establishment of the people's communes, i.e., in the last eight or nine years; the earthwork quantity of water conservancy projects reached a total of 2,100,000,000 m^3 which compares to 23 Suez Canals or ten Panama Canals.

In the Chu-chiang Delta there are 3800 pumping stations with a total capacity of 182,000 kw which can protect 90% of the farmland from disaster even with an average daily rainfall of 200-300 mm. and can guarantee suitable irrigation for even six to seven months of sun.

The Wei-Shih-Hang Irrigation Project of Anhwei Province

In the Yangtze-Hwai hill region of Anhwei Province (the hilly belt between the Yangtze and the Hwai rivers) the earth temperature is high and hills are rugged and since the riverbeds of the Wei River, Shih River and Hangpu River are ten to twenty meters lower than the farmland it was difficult to use this water for farmland irrigation. Therefore this region has long been a notorious drought region and the farm harvest has

been low. After the establishment of the people's communes in 1958 the peasants of the area drew up a plan for the use of the Hwai, Shih and Hang Rivers. This plan, concerned mainly with irrigation, uses the water resources of each river system in the northeast foothills of the Tapieh Mountains and changes the courses of the three rivers, draws the water up hills, and irrigates the more than 800,000 ha of farmland of nine hsien and two cities in the region. In the entire project nineteen waterways of more than fifteen meters bottom width with a total length of 1320 km were dug out and surrounded with a web of irrigation canals. In addition to supplying running irrigation to 80% of the more than 800,000 ha of the farmland which receive the advantage, some waters have been made navigable for ships of more than one hundred tons and by using the head of water level, it will generate more than 140,000,000 kw each year. Here the eighth project, finished in the spring of this year, and the irrigated area reached more than 300,000 ha. With the completion of the seventh project in 1965, more than sixty large and 1000 small constructions were completed, such as reverse siphons, underground waterways, regulated floodgates, etc., as well as the digging of more than 1300 km of rivirways. As a result, food production was generally increased 10-12% and the average harvest for 1/15 hours increased from less than 100 kg in the past to more than 175 kg in 1964. Furthermore, hydroelectric stations were built in two places, supplying power for farm product processing and lighting, and a total of more than 1,200 km. of waterways were made partially navigable.

Large Electric Irrigation Net of Tung-T'ing Lake Area

Since the earth temperature in the Tung-t'ing Lake region of Hunan Province is low, water damage is foten encountered and the preliberation foodstuff production was very low. After the liberation a large number of flood-prevention drainage facilities was set up with government assistance, but it was not possible to thoroughly stem water damage. Therefore a large-scale construction project of water conservancy works and an electric-powered drainage and irrigation net was initiated in 1964 and 4300 km of high-voltage power lines and more than 1200 electric drainage facilities have been erected (total capacity 225,000 kw; the area irrigated and drained electrically has been extended to more than 530,000 ha).

In the Ch'ang-sha-Ch'ing-kang area, where electric irrigation and drainage was begun comparatively early, fifty electric irrigation and drainage stations and 119 km of high-voltage lines were set up by the spring of 1964; electric irrigation and drainage of 80% of the total agricultural land of the area was realized, and 8,200 ha of paddy land yielded an average crop of 682.5 kg.

Completion of Shao-shan Canal in Hunan

Again, in Hunan Province, on June 2 of this year, the province's first large irrigation construction--the main trunk canal of the Shaoshan irrigation region--and the northern trunk canal work completion and

opening ceremonies were held. The Shao-shan irrigation region project was initiated on 1 July 1965, and in barely eleven months, two trunk canals extending 174 km were completed. These two trunk lines pass through seventy mountains, more than eighty mountain streams and canyons, and irrigate about 50,000 ha of farmland. In this construction, 65 million cubic meters rock and earth, and 85,000 cubic meters concrete and reinforced concrete were used. Tunnels in seven places reaching more than 2800 m were dug, and nineteen canal-bridges passing over valleys reaching a length of more than 5,200 m were built. Moreover, some 1,700 small structures--reverse siphons, partial floodgates, bridges, etc.--were constructed. When the southern trunk canal is completed in the second period of construction, the benefitted area will be extended to 70,000 ha.

Electric-Power Irrigation Net of P'o-yang Plain, Kiangsi

The plain around P'o-yang Lake, which is one of the largest freshwater lakes in China, in the grain belt of Kiangsi Province, producing rice, cotton, and fat and oil materials. Before liberation, however, it was often visited by floods in the spring and droughts in the summer because there were no irrigation facilities. For this reason, more than 3,000 km of dikes and many reservoirs and irrigation works were built after liberation. Meanwhile, water and drought damages were considerably mitigated by the construction of 90,000 hp irrigation and drainage facilities. In 1963, construction of a large agricultural village power net was initiated, and irrigation and drainage station construction was initiated to thoroughly prevent water and drought damage. 2700 km of high-voltage lines have now been strung in the large area along a line from P'ing-hsiang and Linch'uan in the south and along a line from Ching-te-chen and Chiu-chiang in the north; 70,000 kw electric irrigation-drainage facilities have been built and the electric irrigation and drainage of 173,000 ha--or approximately one-sixth--of the farmland of the P'o-yang Plain has been realized.

The construction completed so far is no more than the first term, plan construction, and will be continued into the future.

Hai River Water Control Project--Largest Drainage Construction in Hopei

The Hai River, which makes up the drainage system of the large area of Hopei Province, has for a long time been the most disorderly and frequently flooded, and has brought about much diaster. After the liberation, in order to control the heavy rains which fall in the areas between the hills of the upper reaches of the Hai River tributaries, several tens of large, medium and small reservoirs were built. The Hei-lungkang River project to eliminate floods in the lower reaches of the Hai River was begun in October 1965 with 400,000 men, and by February of this year was 70% completed.

The nine rivers which compose the 900 km Hai River system flow from south to north in the Hopei plain, and the 19,000 square kilometers

area drained by these rivers is one-fourth of the Hopei plain, which is surrounded on the west and south by mountains. Since for more than a thousand years the dikes of the Grand Canal (which runs north to south) have obstructed the flow of rain in these rivers and their basins east into the sea, they have turned north, passed through the Heilungkang River and flowed into the Hai River, which pours into the sea. However, the beds of these rivers became high, increasing the danger of floods. The present construction will enlarge the exit of these rivers into the sea to 40 m across and 5 m deep and protect 1,200,000 ha of farmland from floods. In this project one hundred million yuan of capital was allotted by the government and a lot of construction materials were supplied. At the same time, 2,000 tractors and many pumps were carried to the construction site from people's communes and national agricultural machine stations, and 300,000 loads were involved.

Increase in Supply of Irrigation and Drainage Machinery

As seen above, the production and supply of irrigation and drainage machinery to fill the needs of the rapid advances in drainage-irrigation construction and farmland water conservation increased along with the construction.

For example, the mechanical and electrical industries of Shanghai produced several thousand irrigation-drainage pumps in January-May of this year. The yearly plan was more than 80% fulfilled in deep wells, water electric pumps, floodgate opening and closing devices, etc. Diesel engine production for agricultural irrigation and drainage increased more than twice over that of the same period last year, and the quality of goods increased as well.

In Liaoning Province, 98,000 mechanized or semimechanized farm implements--drainage and irrigation facilities, hand tractors, animal-driven paddy weeders, sprayers, etc.--were sent to Yunnan, Kwangtung, Chekiang, Shantung, Sinkiang, etc. In Liaoning province alone, beginning this year of water hammer pumps and large flow, shaft flow pumps, etc., which are welcomed by the farmers.

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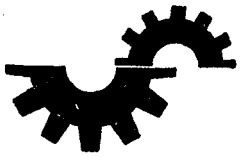

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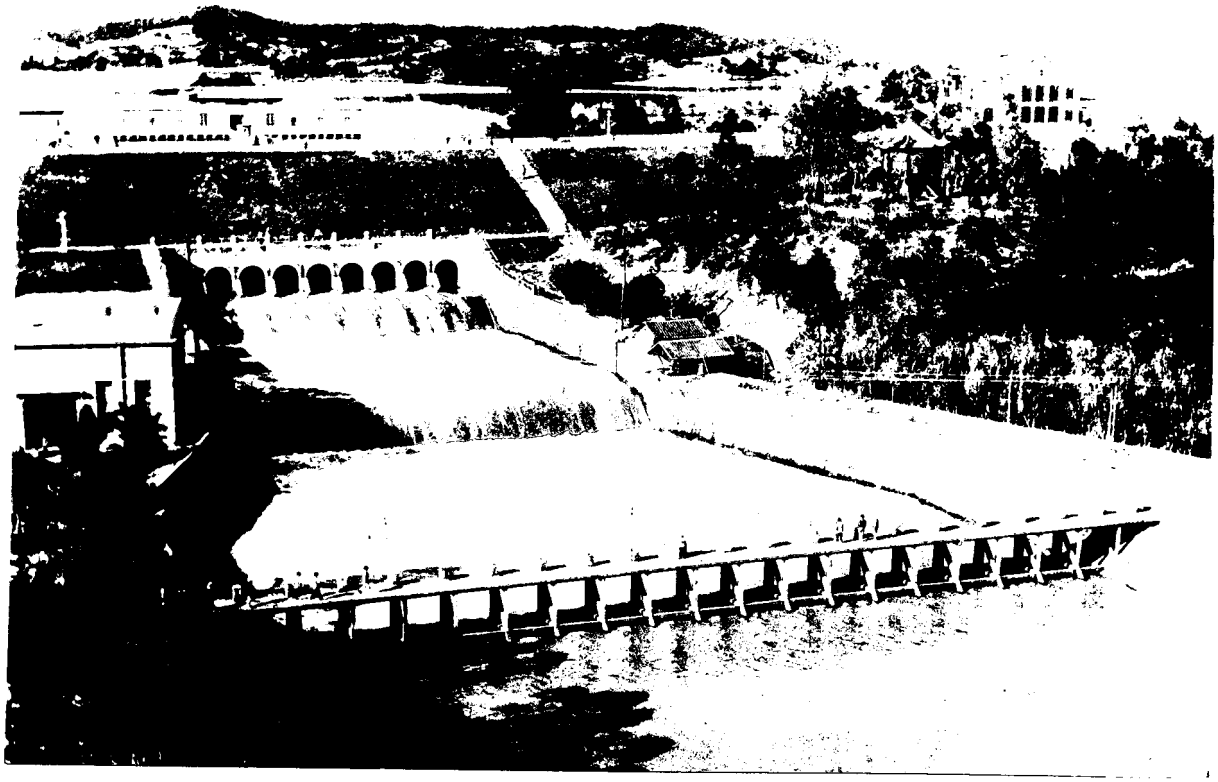

Hsing-ning

24°8'N 115°43'E

Ho-shui Reservoir

CHINA B-0497 LIEN-SHUI RIVER 27 48 N 112 52 E
Chu-chin-tu aqueduct (530 M), part of Shao-shan Irrigation District.
1966. Confidential (24,28,29) CIA 1147643

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

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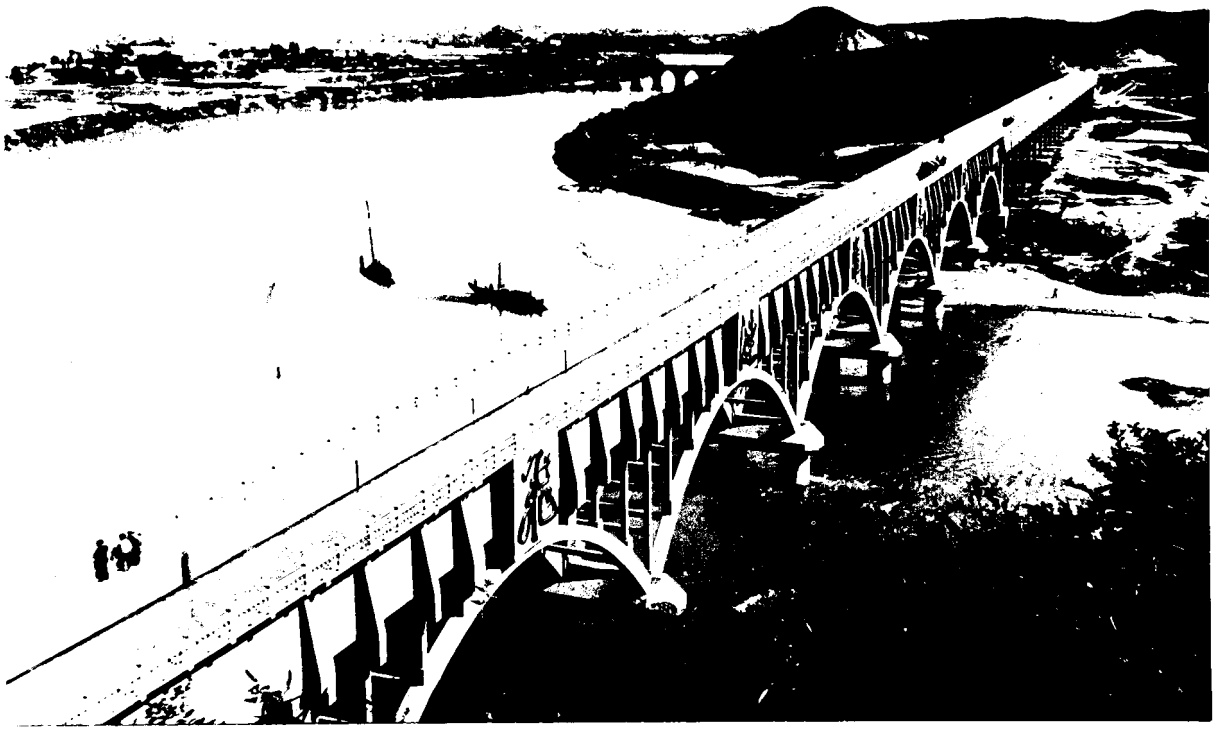

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CHINA D-0493 JUI-CHANG HSIEN 29 40 N 115 39 E
Mechanical irrigation station constr. by Ta-chiao Production Team in order to irrigate terraced fields of tableland. 1966.
Confidential (24,29) CIA 1147644

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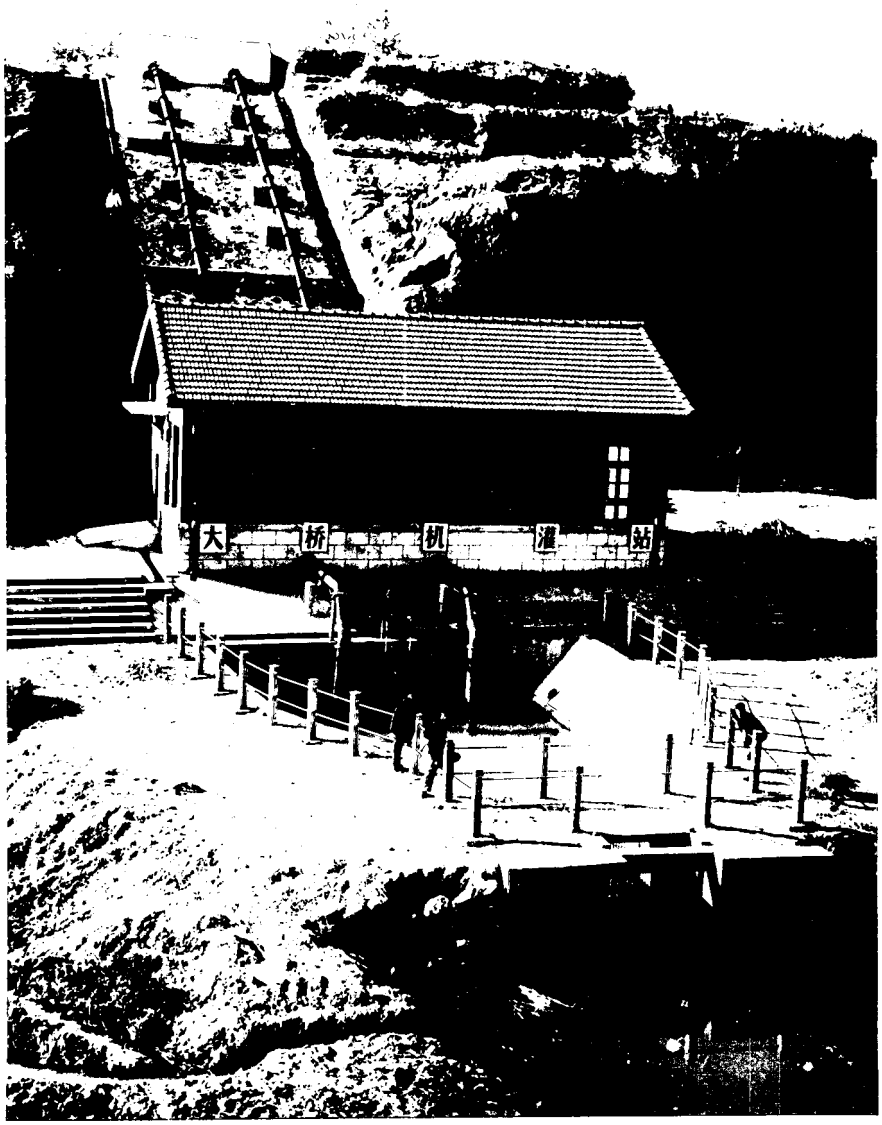

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CHINA A-0381 HOPEH PROV
Tractors used in drainage construction project in Hei-lung-kang region in S part of prov. 1966.
Confidential (24, 29) CIA 1147645

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

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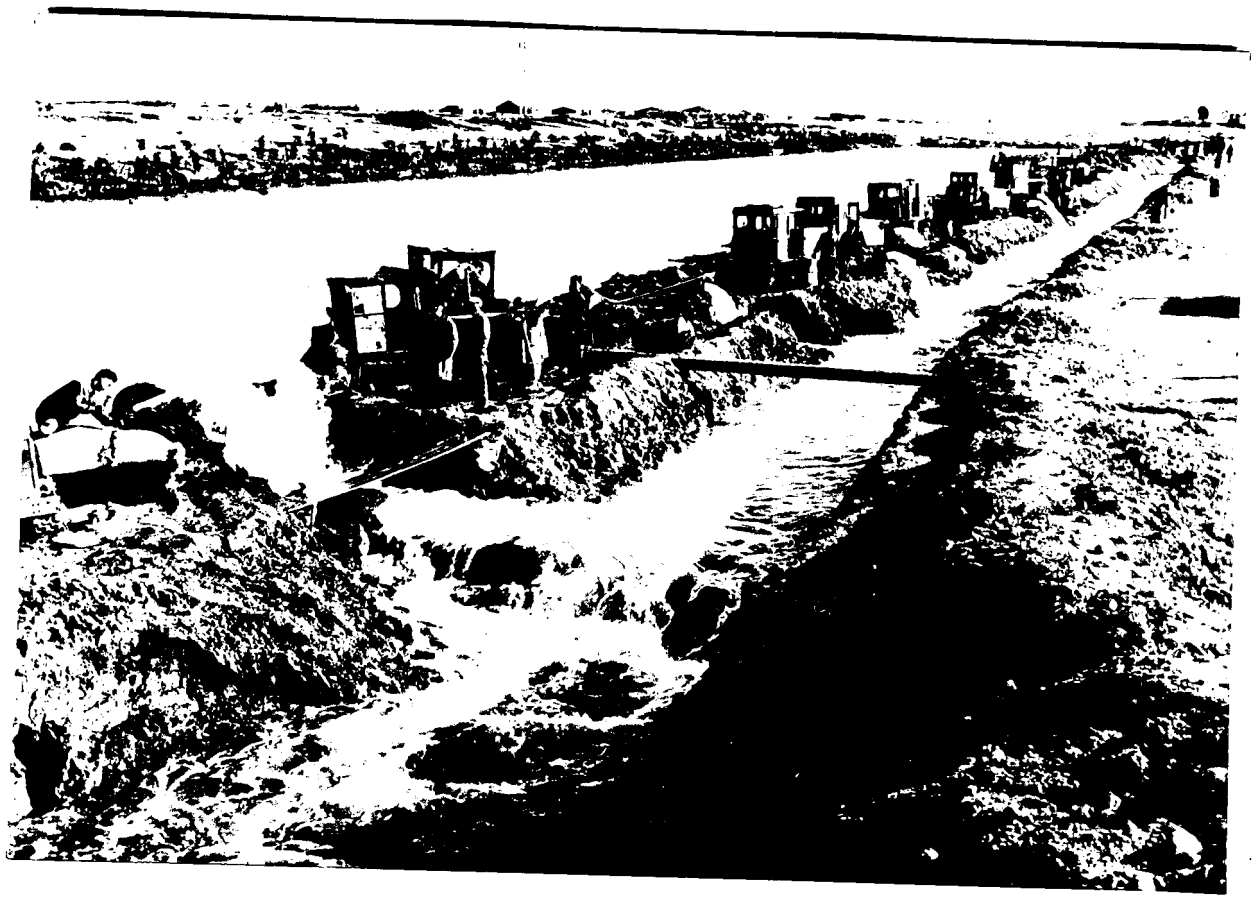

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CHINA A-0386 YU-TAI 34 58 N 116 29 E
Paddy fields irrigated by canals in what was formerly a dry area.
1966. Confidential (24,29) CIA 1147646

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

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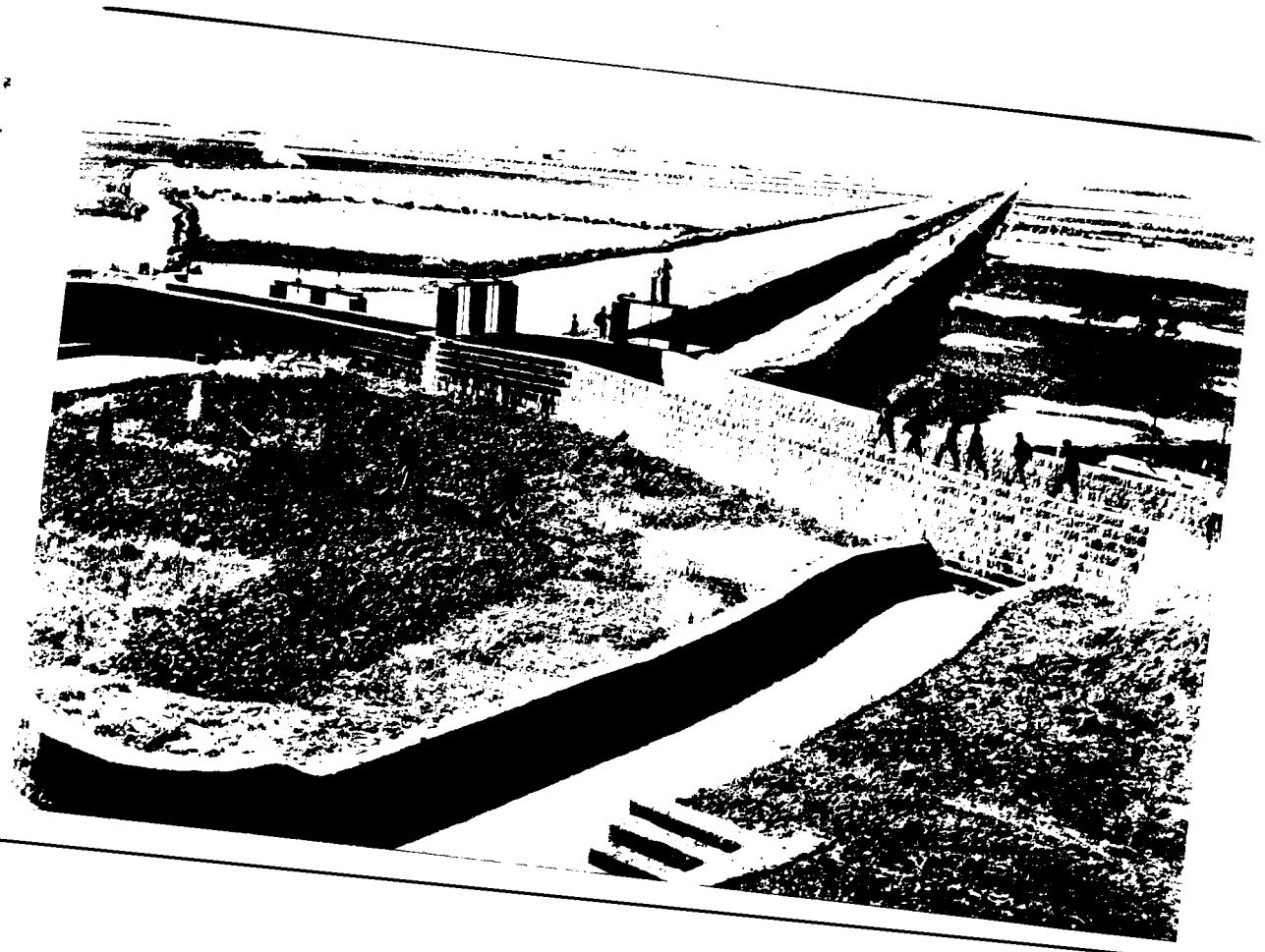

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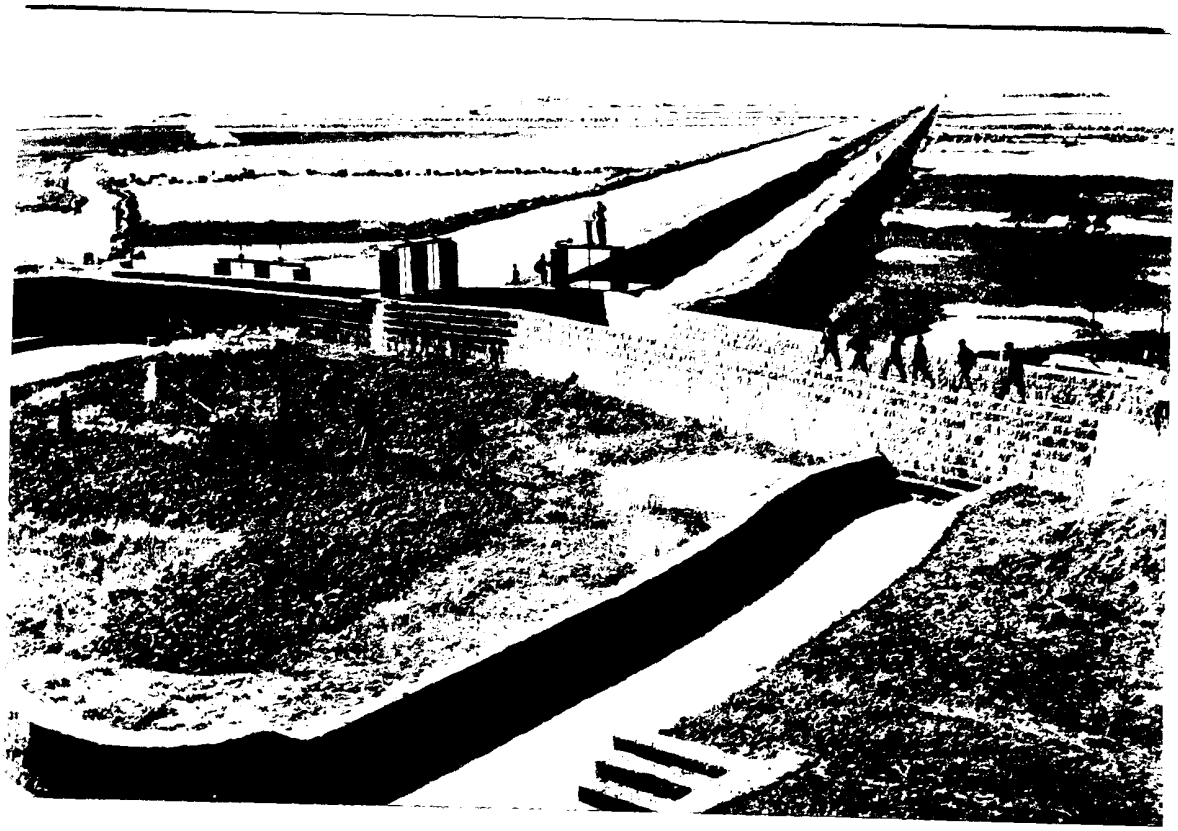

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CHINA B-0615 HO-PU 23 16 N 111 11 E
Members of Tang-chiang People's Commune celebrating completion of flood-gate ov. Yangtze R. 1966.
Confidential (8,10,28,29) CIA 1147647

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

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CHINA D-0334 YU-TIEN HSIEN 36 52 N 81 42 E
Irrigation canal constr. w cement & round stones. 1966.
Confidential (1,24,29,32) CIA 1147648

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

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CHINA [redacted] LAN-CHI 29 13 N 119 28 E
Moveable pump boat constr. of steel reinforced concrete made for irrigation use in regions of great differences in water location of rivers & streams. 1966. Confidential (24,29,30) CIA 1147649

Approved For Release 2003/12/19 : CIA-RDP78-04546A003200020008-9

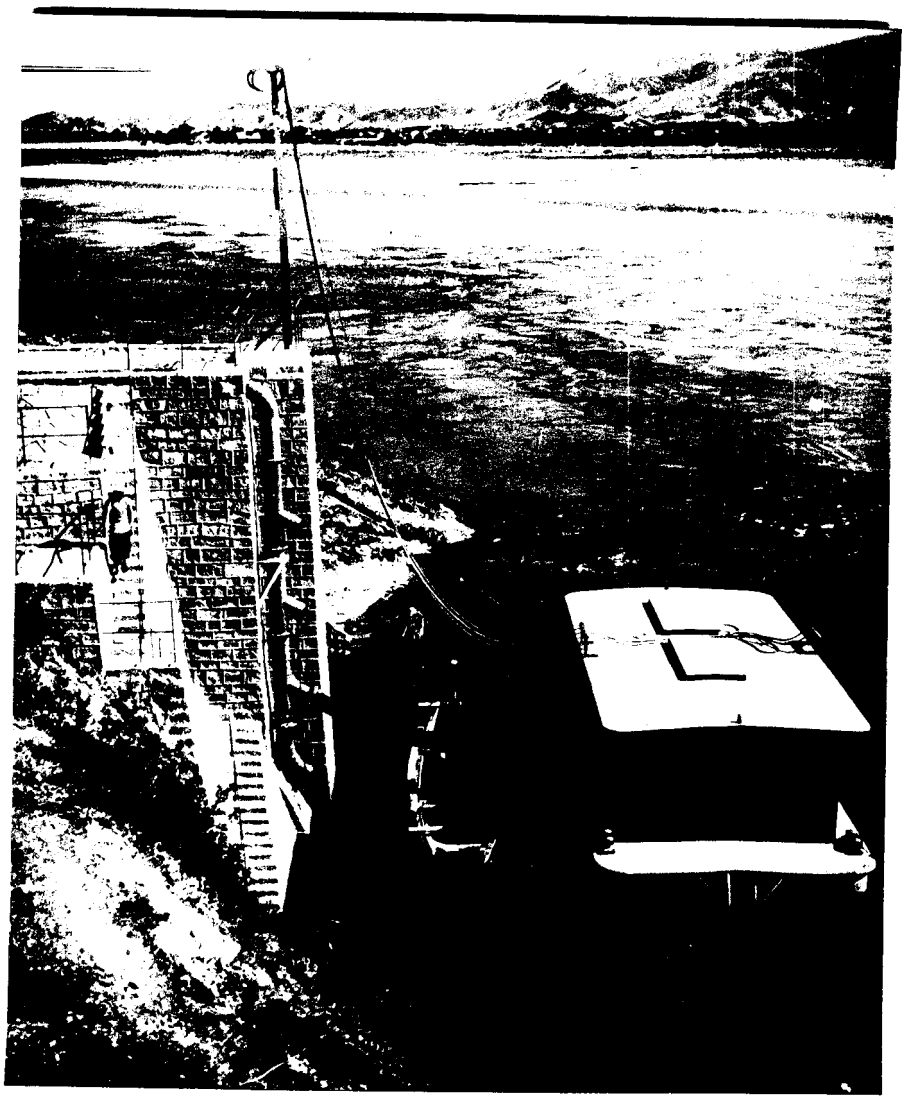

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Photo Captions

1. Hunan Province's first large irrigation construction--the Shao-shan Irrigation District's First Term Project--was recently completed. The Main Trunk Canal and North Trunk Canal extend 174 km., cross more than 70 mountains , and can protect 46,000 ha of farmland from droughts and floods. The photograph shows the canal bridge (530 m) straddling the Lien River. (CIA 1147643)

2. Mechanical irrigation station built by the Ta-chiao Production Team of Jui-ch'ang Hsien in Kiangsi Province in order to irrigate terraced fields of the tableland. (CIA 1147644)

3. In the southern part of Hopei Province there is continual water damage, since the earth temperature is low, and the alkalinization of

the land is terrible. Therefore, there was a large drainage construction project in the Heilungkang region of that area. When this Heilungkang drainage construction project is completed, many rivers and streams will be expanded and brought under control, freeing 1,400,000 ha of farmland from flood damage. The photo shows the construction pattern. (CIA 1147645)

4. For the past several years in Yu-t'ai Hsien of southern Shantung Province, large dry earth restoring work has been underway. Not only have 2700 km (7000 canals) been covered by canals, but 49 drainage and irrigation stations have been erected, expanded, and an irrigation and drainage system for 30,000 ha of farmland has been completed. More than 23,000 ha of farmland where corn and kaoliang used to grow were made into paddy-fields, increasing the 1965 paddy land area to 32,000 ha, and yielding an unprecedented harvest. The photo shows paddy fields and irrigation canals in a formerly dry area. (CIA 1147646)

5. In Hsing-ning Hsien of northern Kwangtung Province, 74 large, medium and small dams and many large water lifting devices have been built in the last ten years to facilitate the irrigation of mountainous regions. The photo shows the Ho-shui Dam which provides water for more than 7300 ha of farmland. (CIA 1121173)

6. A water conservancy construction project which irrigates 7,300 ha of farmland was completed in the Tang-chiang People's Commune in Ho-p'u Hsien, Chuang Autonomous Region, Kwangsi. This construction controls the southern reaches of the Yangtze and irrigates the farmland, altering the nature of what used to be a low-productivity region damaged by droughts and countercurrents of tides. The photo shows the members of the people's commune celebrating the completion of the floodgate. (CIA 1147647)

7. In Sinkiang's Yu-t'ien Hsien on the southern edge of the 330,000 square kilometers Takla Makan desert, the waters of the Kuriya River were drawn to turn the desert into green land after people's communization. Using cement and round stones, a several thousand km long canal was dug which doubled the irrigated area. At the same time windbreak forests were set up, drifting sand was hardened and basic agricultural construction was carried out. The harvest of important crops such as foodstaffs and raw cotton was thus greatly increased. (CIA 1147648)

8. In the field of China's agricultural machinery construction, many types of drainage and irrigation machinery are being produced in order to answer the requirements of the expansion of agricultural water conservation in every regions. The photograph shows a moveable pump boat of steel reinforced concrete made for use in regions of strong differences in water location of rivers and streams. With a 150 kw capacity motor and pump, it can irrigate 460 ha of farmland. This pump boat is working in Lan-ch'i-chiang of Chekiang Province. (CIA 1147649)